

**REMARKS**

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 1-11 are now present in this application. Claims 1, 2 and 11 are independent. By this Amendment, claims 1 and 2 are amended, and claim 11 is added. No new matter is involved.

Reconsideration of this application, as amended, is respectfully requested.

**Priority Under 35 U.S.C. § 119**

Applicants thank the Examiner for acknowledging Applicants' claim for foreign priority under 35 U.S.C. § 119, and receipt of the certified priority document.

**Information Disclosure Citation**

Applicants thank the Examiner for considering the reference supplied with the Information Disclosure Statements filed on March 20, 2006 and on October 19, 2006, and for providing Applicants with initialed copies of the PTO/SB/08 forms filed therewith.

**Restriction Requirement**

The Examiner has made the holding of lack of unity of invention/restriction requirement final, and has withdrawn claims 9 and 10 from further consideration.

Applicant continues to traverse the holding of lack of unity of invention/restriction requirement for the following reasons.

37 CFR §1.475(b), which applies to this Application, clearly, unequivocally and unmistakably states, in pertinent part, that a national stage application containing claims to different categories of invention *will be considered to have unity of invention* if the claims are drawn to only one of the following categories: (1) A product and a process specially adapted for the manufacture of said product.

The Office is bound to follow its own rules of practice, including this specific Rule of Practice during this national stage of Applicant's PCT Application.

Applicant respectfully submits that claims 9 and 10 are processes specially adapted for the manufacture of the product recited in claim 1 (and claim 2 with respect to claim 9).

Accordingly, the Office is required to examine all pending claims, including claims 9 and 10.

Thus, withdrawal of the restriction requirement/lack of unity of invention holding, and reinstatement and examination of claims 9 and 10 along with claims 1-8 are respectfully requested.

**Rejection Under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph**

Claims 6 and 7 stand rejected under 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph. This rejection is respectfully traversed.

The Examiner has set forth one instance wherein the claim language is not clearly understood. The Office Action indicates that the terminology "current plate" is unknown and that the Application does not provide a clear definition of that term or provide a proper basis on which to conclude what precisely a current plate functions to do.

Applicant respectfully disagrees with these conclusions for the following reasons.

The test for compliance with the second paragraph of 35 U.S.C. §112, as stated in *Miles Lab., Inc. v. Shandon Inc.*, 997 F.2d 870, 875, 27 USPQ2d 1123, 1126 (Fed. Cir. 1993), *cert. denied*, 510 U.S. 1100 (1994), is whether one skilled in the art would understand the bounds of the claims when read in light of the specification. If the claims, read in light of the specification, reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. See also *In re Merat*, 519 F.2d 1390, 1396, 186 USPQ 471, 476 (CCPA 1975), which stated that the question under Section 112, second paragraph is whether the claim language, when read by a person of ordinary skill in the art in light of the specification, describes the subject matter with sufficient precision that the bounds of the claimed subject matter are distinct. See also *In re Warmerdam*, 33 F3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). Moreover, this claim recites "substantially." Use of that term in a claim does not render the claim indefinite if the specification provides a standard whereby one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification. See *Seattle Box Co., Inc. v. Industrial Coating and packing, Inc.*, 731 F.2d 818, 826, 221 USPQ 568, 573-4 (Fed. Cir. 1984).

The second paragraph of 35 U.S.C. §112 requires claims to be set out and circumscribe a particular area with a reasonable degree of precision and particularity. See *In re Johnson*, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

Paragraph [0005] of the original Application indicates that patent document 1, which is JP-A-09-220446, shows a current cylinder. Analysis of that patent document reveals, for example, that examples of the current cylinder are shown in Figs. 2 and 3.

Paragraph [0010] of the Application as originally filed, clearly states that the current plate is cylindrical, accommodates the hollow fiber membrane bundle inside of it, has a plurality of through-holes in a wall surface except the vicinity of the nozzle, and has no through-hole in the vicinity of the nozzle.

Additionally, paragraph [0018] of the Application as originally filed, clearly states that the module according to the present invention preferably has a current plate 8 which is arranged to hold the spacing between the hollow fiber membrane bundle and the inner wall of the housing in the vicinity of the nozzle.

Thus, Applicant respectfully submits that the meaning of terminology “current plate” is clearly defined by Applicant, and that the metes and bounds of the claims are clear and definite to one of ordinary skill in the art to which the invention pertains.

Additionally, no basis for the conclusion that an accepted meaning for a “current plate” is “an electrical current harvesting plate” is presented, and none is apparent.

Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

### **Rejection Under 35 U.S.C. § 102**

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Re. 36,125 to Haworth et al. (“Haworth”). This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

A prior art reference anticipates the subject matter of a claim when that reference discloses every feature of the claimed invention, either explicitly or inherently. *In re Schreiber*, 128 F.3d

1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *Hazani v. Int'l Trade Comm'n*, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997). While, of course, it is possible that it is inherent in the operation of the prior art device that a particular element operates as theorized by the Examiner, inherency may not be established by probabilities or possibilities. What is *inherent*, must necessarily be disclosed. See *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981); *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the applicant is entitled to the patent. However, when a *prima facie* case is made, the burden shifts to the applicant to come forward with evidence and/or argument supporting patentability. Patentability *vel non* is then determined on the entirety of the record, by a preponderance of evidence and weight of argument, *In re Gulag*, 62 USPQ2d 1151 (Fed. Cir. 2002).

Moreover, as stated in MPEP §707.07(d), where a claim is refused for any reason relating to the merits thereof it should be "rejected" and the ground of rejection fully and clearly stated.

Additionally, findings of fact and conclusions of law by the USPTO must be made in accordance with the Administrative Procedure Act, 5 U.S.C. §706(A), (E) (1994). See *Zurko v. Dickinson*, 527 U.S. 150, 158, 119 S.Ct. 1816, 1821, 50 USPQ2d 1930, 1934 (1999).

A claim limitation is inherent in the prior art if it is necessarily present in the prior art, not merely probably or possibly present. See *Rosco v. Mirro Lite*, 304 F.3d 1373, 1380, 64 USPQ2d 1676 (Fed. Cir. 2002). The dispositive question regarding anticipation is whether one skilled in

the art would reasonably understand or infer from the prior reference's teaching that every claim feature or limitation was disclosed in that single reference, *Dayco Products, Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368, 66 USPQ2d 1801 (Fed. Cir. 2003).

Claim 1, as amended, recites an external pressure type hollow fiber membrane module comprising: a hollow fiber membrane bundle formed of a plurality of hollow fiber membranes, a cylindrical housing, and a nozzle for allowing a fluid to enter into and exit from the housing, the hollow fiber membranes being fixedly adhered to each other and to the inner wall of the housing at ends of the hollow fiber membrane bundle; a hollow part opened in one side or both sides of adheringly-fixed ends of the hollow fiber membrane; and wherein the nozzle for allowing the fluid to enter and exit therefrom is installed on a side face of the housing of at least one adhesively-fixed end at which the hollow part is opened; wherein the membrane bundle has a cross-sectional area and a ratio  $PB/PA$  of membrane-occupying rates is 0.50 or more but 0.95 or less when  $PA$  is defined as the membrane-occupying rate in a neighboring region (A) having a cross-sectional area that extends from adjacent to the nozzle and toward the center of the cylinder, and  $PB$  is defined as the membrane-occupying rate in a non-neighboring region (B) of the nozzle which has a cross-sectional area that extends between the neighboring region (A) and a side face of the cylinder opposite to the side face of the cylinder where the nozzle is located among a membrane chargeable region in the inner side of an adhesively-fixed part, in at least one adhesively-fixed end of the opened hollow part in the vicinity of the nozzle.

Claim 2, as amended, recites an external pressure type hollow fiber membrane module comprising: a hollow fiber cartridge having a hollow fiber membrane bundle formed of a plurality of hollow fiber membranes, of which both end parts are adhesively fixed and hollow

parts in at least one end of adhesively-fixed ends are opened; and a cylindrical housing accommodating the cartridge and having a nozzle for allowing a fluid to enter and exit therefrom installed on at least one side face, in which the nozzle installed is fixed so as to be placed in the vicinity of the inner surface of an adhesively-fixed part in the opened hollow parts side in the hollow fiber membrane cartridge; wherein the membrane bundle has a cross-sectional area and a ratio  $PB/PA$  of membrane-occupying rates is 0.50 or more but 0.95 or less when  $PA$  is defined as the membrane-occupying rate in a neighboring region (A) having a cross-sectional area that extends from adjacent to the nozzle and toward the center of the cylinder, and  $PB$  is defined as the membrane-occupying rate in a non-neighboring region (B) of the nozzle which has a cross-sectional area that extends between the neighboring region (A) and a side face of the cylinder opposite to the side face of the cylinder where the nozzle is located among a membrane chargeable region in the inner side of the adhesively-fixed part, in an adhesively-fixed end in the vicinity of the nozzle.

Applicant respectfully submits that Haworth does not disclose the invention recited in amended claim 1 or in amended claim 2. For example, the packing density of Haworth's annular hollow fiber bundle varies from the outside of the annulus to the inside of the annulus and, as one goes from the nozzle (22) side of cylinder wall 34 to the opposite side of cylinder wall 34, the packing density of the hollow fiber bundle decreases until it meets wall 14 and then disappears and then increases from the opposite side of wall 14 until it meets the portion of wall 34 that is opposite to the nozzle 22. That is not what is recited in amended claim 1 or amended claim 2.

Accordingly, claims 1 and 2, as amended, are not anticipated by Haworth.

Reconsideration and withdrawal of this rejection of claims 1 and 2 are respectfully

requested.

**Rejections under 35 U.S.C. §103**

Claims 1-5 stand rejected under 35 USC § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0079260 to Boivin et al. ("Boivin") in view of Haworth. This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

Because the rejection is based on 35 U.S.C. §103, what is in issue in such a rejection is "the invention as a whole, "not just a few features of the claimed invention. Under 35 U.S.C. §103, "[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter *as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The determination under §103 is whether the claimed invention *as a whole* would have been obvious to a person of ordinary skill in the art at the time the invention was made. *See In re O'Farrell*, 853 F.2d 894, 902, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988). In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety. *See Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

In rejecting claims under 35 U.S.C. §103, it is incumbent on the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the



factual determinations set forth in *Graham v John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one of ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *See Uniroyal Inc. v. F-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988), *cert. denied*, 488 U.S. 825 (1988); *Ashland Oil, Inc. v Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986); *ACS Hospital Systems, Inc. v Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *See In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783 84 (Fed. Cir. 1992). To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be suggested or taught by the prior art. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1970). All words in a claim must be considered in judging the patentability of that claim against the prior art. *See In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

A suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." *See C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This showing must be clear and particular,

and broad conclusory statements about the teaching of multiple references, standing alone, are not "evidence." See *In re Dembiczak*, 175 F.3d 994 at 1000, 50 USPQ2d 1614 at 1617 (Fed. Cir. 1999).

Moreover, it is well settled that the Office must provide objective evidence of the basis used in a prior art rejection. A factual inquiry whether to modify a reference must be based on objective evidence of record, not merely conclusory statements of the Examiner. See *In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

Furthermore, during patent examination, the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the Applicant is entitled to the patent. Only when a *prima facie* case is made, the burden shifts to the applicant to come forward to rebut such a case.

Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977,988(Fed. Cir. 2006) (quoted with approval in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

In the sentence just prior to citing the *Kahn* case, the U.S. Supreme Court clearly stated that there has to be an apparent reason to combine the known elements in the manner claimed. The Office has the burden of making out a *prima facie* case of obviousness, i.e., by presenting objective factual evidence of a reason to combine the known elements in the manner claimed. The *KSR* decision did not lift that burden from the Office.

The articulated reasoning has to express a rationale explaining what would have led an

ordinarily skilled artisan to combine selected features from each reference in a way that would have resulted in the claimed invention. See, *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741 (2007). Thus, the Supreme Court reaffirmed the fundamental principles set forth in the *Graham v. John Deere Co.* decision, cited and discussed above.

Applicant respectfully submits that claims 1 and 2, as amended, patentably define over both Boivin and Haworth.

Boivin is similar to Haworth in that Boivin's bundle of fibers has annular zones of fibers of different density, the more densely packed fibers being on the outside annular regions of the bundle and the less densely fibers being located toward the center of the bundle. As shown in Fig. 5, for example, the density of the fibers peaks at the outside of the bundle and is minimal at the center of the bundle.

However, this is not what is claimed. In the claimed invention, the density of the fibers changes from a relative high density on the side of the bundle adjacent the side nozzle to a relatively low density on the side of the bundle opposite to the side adjacent to the side nozzle.

Applicant respectfully submits that neither Boivin nor Haworth discloses or suggests the claimed invention.

Accordingly, reconsideration and withdrawal of this rejection of claims 1-5 are respectfully requested.

Claims 6 and 7 stand rejected under 35 USC §103(a) as being unpatentable over Boivin in view of Haworth and further in view of JP 62-204804 to Misao.

As noted above, Applicant respectfully submits that claims 1 and 2, from which claims 6

and 7 depend (in the alternative) is not rendered obvious by Boivin and Haworth. Moreover, Misao is not being applied to remedy the aforementioned deficiencies of the Boivin-Haworth reference combination with respect to claims 1 and 2. So, even if one of ordinary skill in the art were properly motivated to modify the Boivin-Haworth reference combination in view of Misao, as suggested, the so-modified version of Boivin-Haworth would not render obvious the claimed invention.

Accordingly, reconsideration and withdrawal of this rejection of claims 6 and 7 are respectfully requested.

Claim 8 stand rejected under 235 USC §103(a) as being unpatentable over Boivin in view of Haworth and further in view of U.S. patent 5,282,966 to Walker.

As noted above, Applicant respectfully submits that claims 1 and 2, from which claim 8 depends (in the alternative) is not rendered obvious by Boivin and Haworth. Moreover, Walker is not being applied to remedy the aforementioned deficiencies of the Boivin-Haworth reference combination with respect to claims 1 and 2. So, even if one of ordinary skill in the art were properly motivated to modify the Boivin-Haworth reference combination in view of Walker, as suggested, the so-modified version of Boivin-Haworth would not render obvious the claimed invention.

Accordingly, reconsideration and withdrawal of this rejection of claim 8 are respectfully requested.

### **Claim 11**

New, independent claim 11 recites a combination of features similar to those recited in claims 1 and 2, including a membrane bundle that is separated in cross-section into two regions, a first region taking up at least one fourth of the cross-sectional area of the membrane bundle located between a portion of the wall of the cylinder that extends about the nozzle to approximately the center of the cylinder, and a second region that extends from the first region to the side of the wall of the cylinder that is opposite to the side of the wall in which the nozzle is located, and wherein a ratio  $PB/PA$  of membrane-occupying rates is 0.50 or more but 0.95 or less when  $PA$  is defined as the membrane-occupying rate in the first region, and  $PB$  is defined as the membrane-occupying rate in the second region. Applicant respectfully submits that this combination of elements as set forth in independent claim 11 is not disclosed or made obvious by the prior art of record.

Consideration and allowance of claim 11 are respectfully requested.

### **Conclusion**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

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Art Unit 1797

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If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46, 472, at (703) 205-8000, in the Washington, D.C. area.


Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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